

THE
ALPHA
PORTLAND
CEMENT CO



EASTON, PA.

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ALPHA
PORTLAND CEMENT

for Eternity

ALPHA PORTLAND CEMENT COMPANY



WORKS:

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MANHEIM, W. VA.
CEMENTON, N. Y.

MAIN OFFICE: - EASTON, PA.

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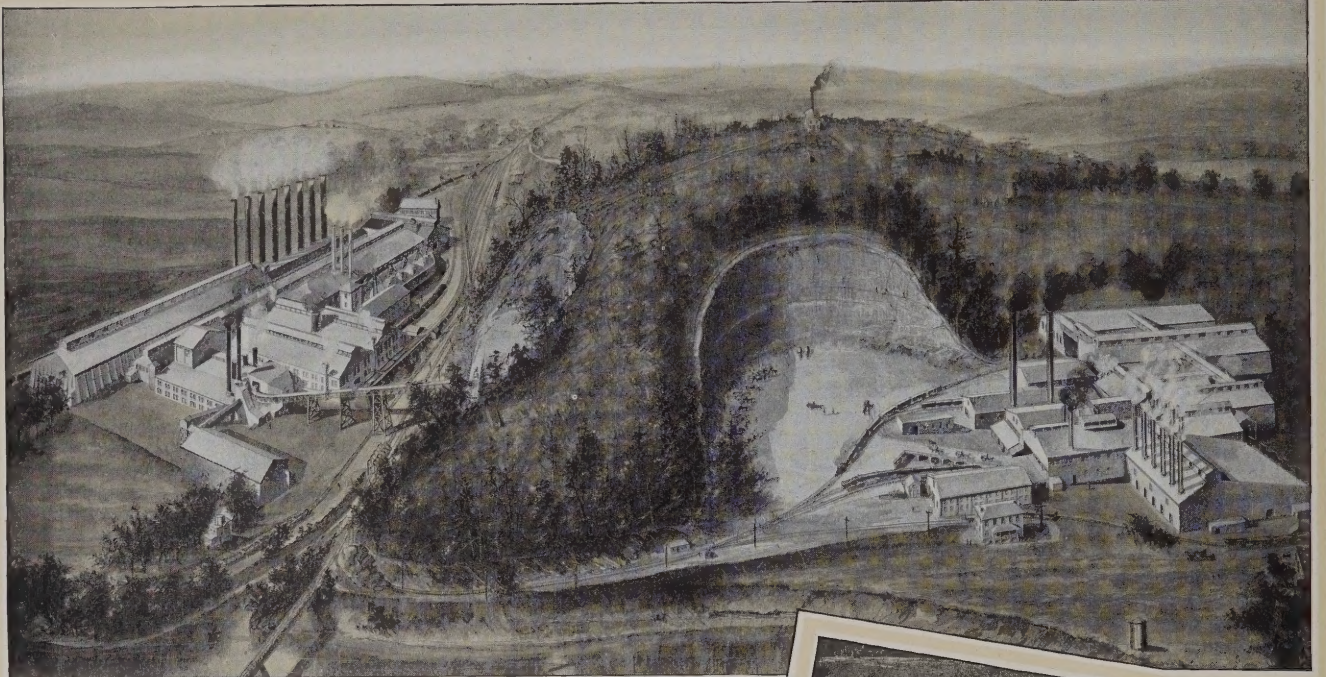
Introductory

IN placing this book before you, our aim has been the compilation of concise, authentic information on Portland Cement for the convenience of Architects, Engineers, Contractors, Dealers and all who may have occasion to explain the advantages and uses of Portland Cement in *popular* language.

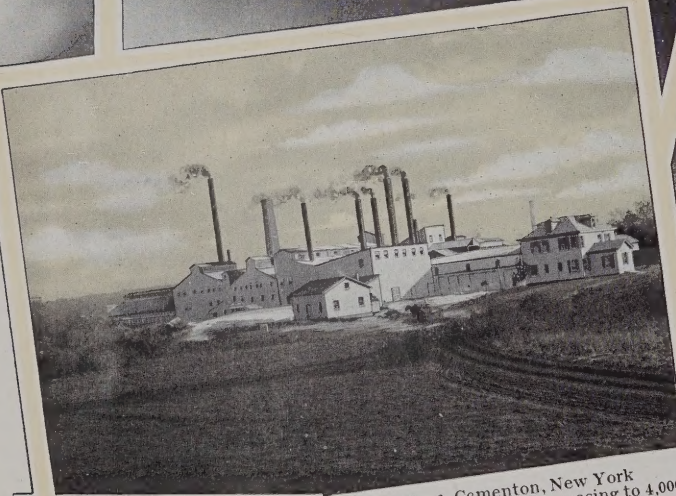
Much literature on this subject has been published for the expert, hardly any for the home owner who scarcely realizes the great utility of this, the most adaptable of all building materials for economical construction and improvements.

These pages also show the wide-spread use of Alpha Portland Cement by the foremost Architects, Engineers and Contractors.

Respectfully,
ALPHA PORTLAND CEMENT CO.
EASTON, PENNA.



Mills Nos. 3 and 4, Martins Creek, Pa.
Output 8,000 barrels daily



Mill No. 6 Cementon, New York
Output 1,200 bbls. daily increasing to 4,000



Mill No. 5, Manheim, West Va.
Output 1,500 barrels daily

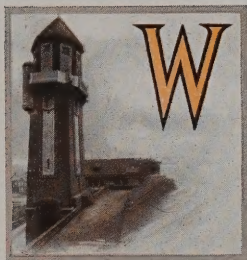


Mills Nos. 1 and 2 Alpha, New Jersey
Output 6,400 barrels daily

Alpha Portland Cement Company

PIONEER
MANUFACTURERS
OF
PORTLAND CEMENT
IN AMERICA

"Alpha" Has Stood the Test of Time



WHEN the Alpha Portland Cement Company began business in 1891, some nineteen years ago, its product came in direct contact with celebrated foreign brands of cement. To compete with such brands, and against the strong prevailing prejudice in favor of the foreign article, it was necessary to produce a grade of the highest quality.

Thoroughly realizing at that time the significance of quality, and having won our fight against the foreign article solely on merit, we have made **Quality** our watchword and slogan.

The Quality of "Alpha" is Safe-Guarded in Every Way

Many concerns leave pretty much the entire process of manufacturing in the hands of mechanical men, whose object is to get the greatest possible output at the least possible expense. This system does not at all times admit of the proper mix or proportioning of the raw material and often results in underburning, coarse grinding and unseasoned cement. The chemist, under such a system is largely handicapped and can hardly be held responsible for the Quality.

The Alpha Company reverses this order of things. The Chemical Department is held absolutely responsible for the Quality and it is, therefore, necessary to place the manufacturing entirely in its hands. Almost hourly the Chemists make tests of the product in each step of manufacture. Their instructions are rigorously carried out. This method increases the cost of manufacturing "Alpha," but the results more than justify this additional expense.

We wish to emphasize the fact, that the Alpha Portland Cement Company manufactures but one brand, "Alpha"—a strictly straight Portland, the best that can be made and the same for everybody.

It contains no adulterants, no slag or other by-products. It is "slow setting," allowing ample time for mixing, placing and ramming

before hardening. It is an established and well-known fact that the ultimate strength of a slow setting cement greatly exceeds that of a quick setting cement. "Alpha" Portland Cement is always uniform in strength, color, fineness and setting time; unexcelled for sand capacity, reliability and durability. It is better than most cements; that is, it takes less "Alpha" than others to produce the same results.

"Alpha" is guaranteed to more than comply with the Standard Specifications as adopted by the American Society for Testing Materials and approved by the American Society of Civil Engineers.

Adulterated Cements

It has often been suggested to us to make a cheaper or second grade cement, so as to be able to meet in price some of the cheap, adulterated brands on the market. Such suggestions have never for a moment been entertained. The old inferior Natural Cements, such as Rosendale, Cumberland, etc., have practically gone out of existence. The same can be said of many adulterated, mixed or blended brands of cements—the same fate will ultimately overtake the few remaining adulterated brands on the market.

The wise buyer realizes that when he buys cement, he buys a lot of freight, also labor (excavating, mixing, placing, ramming, etc.,) as well as lumber for forms, etc. Consequently he will not buy any adulterated cement or cement containing inert matter—he wants every particle of it to be active, intensely active and of the very best—*that cement which will carry the least possible freight and labor and carry the greatest possible quantity of sand and crushed stone.*

Unexcelled Shipping Facilities

Quite as important as excellence and quantity of output, is the ability to get that output promptly into the buyer's hands. The Alpha Company, with a production of 17,500 barrels per day—over 6,000,000 barrels per year—and storage houses with a capacity of 1,500,000 barrels, has packing houses with a maximum capacity of twice its daily output. This enables the Company to take care of its customers with shipments to the extent of 33,000 barrels daily.

To handle such large shipments, prompt railroad service is necessary. Our private sidings connect directly with five of the main trunk lines of the country—Lehigh Valley Railroad, Delaware, Lackawanna & Western, Pennsylvania Railroad, Baltimore & Ohio, and the New York Central Lines. Through the Lehigh & New England Railroad, connection is made with the Philadelphia & Reading, the Central Railroad of New Jersey, the Erie and to New England points via Poughkeepsie Bridge Route. These connections assure us of an ever-ready and liberal supply of cars, and we are, therefore, in a position to serve quickly any section of the country.

Aggregates

Concrete is an artificial stone resulting from the hardening of a mixture of cement, water, fine and coarse aggregates. The latter may consist of sand, gravel, crushed rock, cinders or slag.

The durability of concrete depends largely on its density and hardness. Round particles, properly graded from the finest to the largest size permitted, give a much denser mixture than angular shapes.

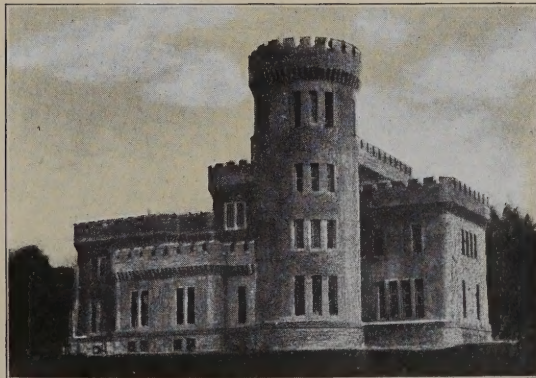
Gravel, crushed rock, cinders or slag are used according to the availability of the material and the character of the work. Granites and trap rock are the most desirable crushed stone.

The size of the particles varies with the kind of work. The larger they are (within the limits), the stronger the concrete. For ordinary work, over six inches thick, they may run safely up to three inches diameter. The diameter of the largest should never equal half the width of the form.

For reinforced concrete the largest particles should pass through a one or one and one-half inch ring. Some engineers demand even smaller sizes.

Sand should not contain impurities, nor more than 10 to 15 per cent. fine materials such as silt, clay or loam. If compelled to use sand containing a high percentage of fine grains, first mix the dry materials very thoroughly, add water and avoid too much troweling; otherwise it will in time develop "hair-cracks" on the surface. These are seldom more than one-sixteenth of an inch deep and do not weaken the concrete in the least; but are unsightly and avoidable.

Do not use sand that can be pulverized between your fingers, nor sand that soils the hand, or smells, indicating decaying organic matter. A good way to test sand is to stir it in a glass of water. Good sand settles at the bottom leaving the water clear.



Alpha Portland Cement

Proportioning

Before beginning cement construction much time and money may be saved by studying the proper proportions of the ingredients for the most economical, yet densest concrete; as density means strength, impermeability and durability.

The principle involved is the filling of voids (air spaces) in the ingredients by the largest possible particles. Care in proportioning will often result in stronger concrete, even with less cement.

Knowing what ratio of sand to stone gives the densest mixture, the proportion of cement can be easily determined. For example, if two parts of sand exactly fill all the voids in five parts of stone, this ratio 2:5, would make the densest possible mixture of these two ingredients. That is, no more sand or stone could be added to this mixture without increasing its bulk. If we want to add one part of cement to seven parts of this mixture, we have the proportion 1 : 2 : 5, meaning one part cement, two parts sand and five parts stone. With the same materials, the strongest concrete is that which contains the most cement in a given volume. The measurements always refer to "volume", not weight.

If the sand and stone gives a ratio of 3 : 5, and a mixture of one part cement to eight parts ingredients is desired, this is expressed by the proportion 1: 3: 5.

In some instances "Alpha" has been successfully used in the ratio of one part cement to nine and ten parts other ingredients. But such a lean mixture is not advisable where strength is important. It takes less "Alpha" than most others to produce the same strength in concrete.

The following table gives some practical suggestions for proportioning concrete for general purposes; but in large structures the engineer or architect must be consulted:

Proportions by Volumes	REQUIRED PER CU. YD. CONCRETE		
	Cement Bbls.	Sand Cu. Yds.	Stone Cu. Yds.
1:2:3	1.57	0.52	0.78
1:2:4	1.33	0.44	0.88
1:2:5	1.15	0.38	0.95
1:2:6	1.00	0.33	1.00
1:3:4	1.07	0.53	0.70
1:3:5	0.97	0.48	0.80
1:3:6	0.89	0.44	0.88
1:3:7	0.83	0.41	0.95

If you wish to determine the proportions yourself, the following methods are suggested:

1. Partially fill a barrel with a weighed amount of coarse aggregates. Add sand, washing it into the voids with water. Then syphon off the excess water, and repeat the operation until the sand flushes even with the top of the stone. By keeping account of the quantity of sand used the proportion is readily obtained.

2. Make a number of trial batches of concrete of different proportions, using the same amount of cement and water. Then, after it has set, determine which batch weighs the most per unit volume. Other conditions being equal, the densest mixture, that is the heaviest per cubic foot, is the best. To simplify these tests, it is well to have these trial batches of uniform size; using sections of discarded pipes, boxes of equal size, etc.

How "Alpha" Portland Cement Should be Mixed with Sand and Broken Stone for Concrete.

Mix the sand and cement thoroughly together. Add the least possible amount of water and turn the same over twice. After thoroughly wetting the stone, add same to the mixture of cement and sand. Put at once into mould and ram well.

This mixture is used only where the ground may be moist and extreme weight must be carried:

- 1 part "Alpha" Portland Cement.
- 2 parts clean sand.
- 3 parts broken stone (pass through 2 inch ring).

This combination, mixed as below, will give you a concrete strong enough to carry the tallest building:

- 1 part "Alpha" Portland Cement.
- 2 parts clean sand.
- 4 parts broken stone.

This combination, mixed as directed below, gives you a concrete strong enough for all ordinary construction.

- 1 part "Alpha" Portland Cement.
- 3 parts clean sand.
- 6 parts broken stone.

This combination is stronger and cheaper than you could get by using the so-called common or Rosendale cements:

- 1 part "Alpha" Portland Cement.
- 4 parts clean sand.
- 8 parts broken stone.

After concrete is once set it is a good plan to keep it wet for three or four days.

Comparative Cost of Brickwork and Concrete

Estimating that 500 bricks will lay one cubic yard, using 1 to 3 Portland Cement mortar, we find as follows:

500 brick	\$4.00 *
¾ barrel Cement @ \$1.75	1.30
¼ load sand @ \$2.00 per load of 4000 pounds	.50
Labor	2.25
Total	\$8.05

CONCRETE CONSTRUCTION.

1 part cement, 3 parts sand and 6 parts broken stone.

1 barrel Alpha Portland Cement, delivered	\$1.75
¼ load sand @ \$2.00 per load of 4000 pounds	.50
Broken Stone @ \$1.50 per long ton.....	1.50
Labor and shoring	1.50

Total **\$5.25**

Showing a saving per cubic yard in favor of Concrete of..... **\$2.80**

In addition to this, Concrete does not deteriorate with age and is, in fact, superior in every way to brick construction.

Water

Water for gauging (mixing) should be clean and free from acids, alkalies or oils. Cold water (below 40 degrees Fahrenheit) retards the set of concrete. The amount used varies with conditions as described in the other chapters, and divides green concrete into three groups according to its consistency: "wet," "medium" and "dry."

"Wet" concrete requires but little puddling, flowing readily into corners and crevices. It is preferred for reinforced concrete, as the metal can be easily imbedded. "Wet" concrete requires a bucket or similar vessel for handling.

For general work "medium" concrete gives the densest, hence the strongest mixture. It quakes like jelly and can be carried on a shovel.

Taylor and Thompson say in their book "Concrete Plain and Reinforced" that concrete of medium consistency proves the most impermeable.

"Dry" concrete should contain enough water so that tamping brings it easily to the surface.

The dryer and hotter the weather the more water should be added. See chapter on "Atmospheric Influences."

In surfacing concrete too much water or troweling draws an excess of fine particles of sand and cement to the surface, which is apt to cause sizing or hair-cracks. These do not affect the concrete but look unsightly and are avoidable.

Mixing

Concrete is mixed either by hand or by machine. The latter is more economical for large quantities.

Hand Mixing: First mix dry "Alpha" Portland Cement and sand thoroughly, that is, until the mixture shows a uniform color. This dry mortar is then spread over the moistened stone or aggregates to an even thickness. The mass is turned several times until thoroughly mixed. Water is added and the mixture is again turned several times until the right consistency is reached. Do not heap or pile the concrete; this would let the coarser particles roll to the outer edge of the pile.

It is impossible to obtain a satisfactory mixture by dumping stone, sand and cement together in a pile, hollowing the centre, adding water, shoveling the mass toward the centre and turning it once or twice—as is sometimes done.

Do not mix too much concrete ahead, nor more at a time than can be readily handled.

Machine Mixing: The various types of rotary, paddle and gravity mixers are classified as "Continuous" or as "Batch Mixers." A Concrete Mixer should be judged according to—

1. Quality of output; that is, uniformity and thoroughness of the mixture, either dry or wet.

2. Capacity and output, and cost thereof.

3. Water control; the more perfect, the better.

4. Time of mixing the batch.

5. Construction and devices for receiving materials, discharging concrete, self cleaning, accessibility.

6. Construction, weight, quality and design of the mixer as to durability, portability, etc.

"Alpha" Portland Cement, mixed by hand or machine, gives the highest quality of concrete.



Forms for Concrete Construction

When first mixed, concrete is a plastic mass which is placed into "forms" whose shapes it assumes on "setting" (hardening). The most common material for this purpose is lumber. Half-dried lumber is the best. When kiln-dried it is apt to swell due to the water in the concrete.

The form boards are generally from one to two inches thick, and should be so designed that they can be readily taken down. The forms are stiffened with studding on the outside, from twelve to twenty-four inch centres. In addition, particularly for wall construction, No. 8 iron wire is often passed through two holes bored in each side and twisted tight in the centre with a stick. This keeps the boards from bulging. After their removal the wire remains in the concrete. Cut off the protruding ends.

To prevent the concrete from adhering to the lumber, the inside surface of the forms is sometimes coated with oil, soap, parafin or grease. For rough work merely wetting with water is sufficient. For fine surface finishes use shellac.

For beams, roofs, floors, culverts, etc., forms should remain in place, until the concrete has hardened enough to carry the load intended, at least a week (and sometimes longer). If the forms remain up too long, their removal may cause the fine particles, attracted to the surface, to "scale" (peel). In removing them do not deface the concrete by prying tools against it.

Use as few nails as possible. If you do not drive them home their projecting heads are readily pulled with a claw hammer, thus saving the lumber.

Atmospheric Influences

The setting time of cement is hastened by heat and retarded by cold. Cement that had been stored in a close, unventilated building has been known to become quick-setting on extremely hot days. It is advisable to provide ventilation and shelter from the sun, excessive heat and dampness. The walls and floor of the storage shed should be paper-lined. The latter should be so raised that the cement will not absorb moisture from the ground. In hot weather more water should be used for mixing than in colder weather, and the concrete should be moistened daily the first seven days.

Cold does not affect concrete already set, but freezes the water in green concrete and prevents setting until the ice is thawed. Then the same reaction occurs as though fresh water had been added and the mass sets properly, unless frozen a second time. *It should not be allowed to repeatedly freeze and thaw.*

Concrete is generally protected from frost by one of three methods, viz :

(1) By adding common salt or chloride of lime to the gauging water, thus lowering the freezing point. The amount added should not exceed 10% of the weight of the water. Prof. Tetmajor's rule for common salt is to add 1% of salt for each degree below 32°F. It is well known that a calcium chloride solution freezes at a lower temperature than a salt solution and, according to Prof. Meade, increases the tensile strength. It will also often make an unsound cement sound. From the same tests he determined that 2% solution gave the maximum results.

(2) Hot water may be used for gauging (mixing) purposes. The sand and stone may be heated before mixing.

(3) Fresh concrete may be sheltered with portable wood or canvas housing heated by stoves or steam pipes from a boiler (generally close by in large operations).



Sidewalks and Pavement, Curbing and Gutters

"Best in the World for Sidewalks."

This slogan has been applied exclusively to "Alpha" Portland Cement by enthusiastic contractors who have laid thousands and thousands of miles with it and who used no other brand.

FOUNDATION. Excavate from eight to fifteen inches (the colder the climate the deeper). Then grade for natural drainage and prepare a solid bed by rolling or ramming the earth thoroughly. Remove *all* top soil or sod. If necessary to obtain the desired grade, make the sub-base thicker. If the sub-soil is water-tight (clay, for instance), use blind drain leaders so that no water can stay under the walk and lift it when freezing.

Of course, the excavation should be wide enough to admit the forms, generally made of two inch scantling set edgewise and flush with the surface of the walk.

THE SUB-BASE is placed on the solid earth bed. Cinders, gravel or broken stone are excellent for the purpose as they facilitate drainage. This material, thoroughly compacted by moistening, tamping or rolling, should be from four to eight inches thick for roadways and from three to seven inches thick for sidewalks.

THE BASE placed on the moistened sub-base, consists of layers of concrete, varying in richness and depth, according to traffic requirements. This layer is generally from four to six inches thick and thicker where no top coat is applied. One part "Alpha" Portland Cement to eight or nine parts of aggregates generally makes a rich enough mixture for sidewalks. Heavy traffic calls for a richer mixture; so does a sidewalk without a top coat. In such cases the mixture should be as dense as possible.

THE TOP COAT OR FINISHING COAT, from $\frac{1}{2}$ to $1\frac{1}{2}$ inches thick for sidewalks, and one to three inches thick for roadways, should be a mortar of one part "Alpha" Portland Cement and two or three parts sand; to be applied while the base is still green. This coat is finished in the usual manner, with a trowel or sometimes with special finishing tools that embellish the surface with striped or dotted patterns.

JOINTS generally divide the walks into slabs from five to seven feet square, add to the appearance and provide for expansion or contraction. They extend through the full thickness of the concrete and are sometimes filled with felt paper or some other water-proofing material. We quote from Taylor & Thompson's book "Concrete Plain and Reinforced:"

"A watertight (contraction) joint may be made by leaving a slit about one-half inch wide and filling this with a plastic material, one of the best for this purpose being pure asphalt of medium hardness. Some dust is sometimes mixed with the asphalt. Another way of forming a joint is to insert two or more thicknesses of tarred paper."

CURBS AND GUTTERS are generally laid in monolithic form. Some contractors, however, prefer to construct them in two sections: either by resting the gutter slab

on the base of the curb with a horizontal joint; or by making the curb in one piece, with a vertical joint. Joints for the linear contraction and expansion of concrete should be provided in curbing and gutter construction, as well as in other forms of concrete work.

TREES are not injured in the least by cement sidewalks. The roots should be cut away to a depth of six or eight inches below the excavation. The concrete should be kept away from the trunk, exposing enough soil to absorb the necessary moisture and allowing for growth of tree.



Concrete Surfaces

Unless treated as suggested below, concrete shows the grain of the forms. To obtain a perfectly smooth surface apply grouting one part "Alpha" to one or two parts of very fine sand while the mass is still moist. This mixture should run like a thick paint for brush work, or be semi-liquid when a trowel or float is used.

A similar finish is produced by "troweling" after the removal of the forms. Another way to produce this surface is to work a thin tool like a spade next to the forms as soon as the concrete is placed, allowing the mortar to come in contact with the forms.

To get a "**rubbed finish**", the forms should be removed before the mass is very hard. The surface is then rubbed with a brick or a wooden float.

To obtain a "**rough**" surface, scrub with wire brushes before hardening. Then wash with water, which removes the finer particles and exposes the stone. If the aggregates are selected with this end in view, a variety of rich effects is possible.

The same surface may be secured at any time, no matter how long the walls have stood, by scrubbing with an acid solution, followed by washing with an alkali and a final rinsing with water.

DRESSED STONE EFFECT. After the mass is thoroughly hardened it may be bush-hammered.

COLORED CONCRETE. If color effects are desired, lamp black or mineral colors may be substituted for part of the sand in the surface coat.

The following proportions may be used. Mix with cement dry:

Gray: 1 barrel of cement to 2 pounds of Excelsior carbon black.

Brown: 1 barrel of cement to 25 pounds of iron oxide.

Red: 1 barrel of cement to 30 pounds of iron oxide.

Bright Red: 1 barrel of cement to 25 pounds of Pompeian Red.

Yellow or Buff: 1 barrel of cement to 25 pounds to 35 pounds yellow ochre.

Sometimes "efflorescence" (a whitish discoloration) appears on the surface. This is caused by soluble salts contained in the aggregates and brought out by atmospheric moisture. If rain does not wash the blemish off, scour with water or an acid solution. The deposit may appear repeatedly but will finally cease. It may be avoided by examining the aggregates and the gauging water for soluble salts.

Reinforced Concrete

This method of construction is generally used in important structures protecting precious lives and property. In reinforced concrete the metal members are bound and held in place by the concrete; which keeps them from slipping or bending under stress. Therefore in such concrete only cement of the utmost reliability should be used. "Alpha" Portland Cement, containing no adulterants, no slag or other by-products is, therefore, particularly well adapted for this class of work.

Various systems of reinforcing are used. Their selection and the structural design of the building are a strictly technical problem. It should be entrusted to a competent engineer. He will see to it that the steel or iron is of the proper quality, size, etc.; free from anything apt to hinder the adhesion of concrete. The concrete in which a strictly pure Portland cement is used also protects the metal from rust, corrosion and fire.

The economy of reinforced concrete construction rests upon its distribution of the strain (stresses) as best suited to each material: by combining the two in such a way that the steel assumes the tensile and shearing stresses, while the concrete receives the compression stresses, a great saving in both materials is effected.

Fireproofing

The superiority of concrete over all other materials has been proved by many fires and recognized officially by all Municipal Building Codes.

Its value for fireproofing is two-fold:

It does not burn.

It is a slow (poor) conductor of heat.

In official tests linen rags placed within concrete blocks, remained intact though the blocks had been exposed to intense fire and heat.

"Alpha" Portland Cement has an old and successful fire-fighting record. For example, in the great Baltimore conflagration thousands of barrels of "Alpha" Cement had been used in the surviving buildings. As a result "Alpha" Cement was largely specified in rebuilding the burned district.

An official fire test with "Alpha" Portland Cement was made by direction of the Chief of the Bureau of Building Inspection of Philadelphia. The Engineer in charge reported that the ordinary concrete mixture was used. The test specimen was exposed to fire for four hours. The maximum temperature was nearly 2300 degrees, the average 1859 degrees; whereas the average temperature of a conflagration is only 1400 degrees. Water was turned on the mass before it was allowed to cool. It came out of the test in splendid condition with only a slight superficial crack. There was no spalling. Though the bottom surface had been heated to a cherry red there was not the slightest sign of disintegration or separation between slabs and beams.

Cinder concrete, that is, concrete made with cinders instead of crushed stone, is very porous and therefore an ideal fireproofing material. It is widely used where not subjected to heavy loads.

The Fire Underwriters generally require at least two inches of concrete fireproofing to protect structural steel.

Concrete Blocks

Experience has conclusively proven that concrete blocks can be profitably made, sold and laid below the cost of bricks of similar grade.

Mixtures for concrete blocks should be as wet as possible. The blocks should not be allowed to dry too fast; protecting them during the ageing (curing or hardening) period from sun and excessive temperature. For the first few days (five to seven) of ageing it is well to sprinkle daily. An atmosphere of steam hastens the process.

Do not use the blocks until properly aged. This caution is too often ignored.

Blocks containing coarser aggregates are stronger than blocks of cement and sand only.

Cement and sand veneers should be sufficiently moist, not too richly proportioned, nor contain too fine sand, and should be kept well moistened while ageing.

Blocks properly made of "Alpha" Portland Cement with the right aggregates are more impervious to moisture than brick.

"Alpha" Portland Cement is particularly well adapted for Concrete Blocks on account of its uniformity and superior quality—it contains no adulterants, no slag or other by-products.

Waterproofing

Like all other building stone concrete contains small voids through which a small quantity of water seeps in dams, reservoirs, etc., unless the concrete is "waterproofed." "Alpha" Portland Cement has been used widely in such work.

Water-proofing is done by either an internal or an external method. In both methods the concrete should be very dense, "wet" in consistency, and rich in cement. When monolithic work cannot be carried on continuously, that is night and day,

roughen the surface of the old concrete before resuming, and then apply a paste of neat cement or a rich mortar. This should make a water-tight joint.

Internal water-proofing may be accomplished by various methods:

By proportioning the aggregates for the greatest possible density.

By adding a mixture of soap and alum; for a mortar of 1 part cement to 3 parts of sand add 1 pound of alum to every cubic foot of sand and from $\frac{1}{2}$ to $\frac{3}{4}$ pound of soft soap to every gallon of water.

By adding patent water-proofing compounds.

By replacing part of the cement with a small amount of well slaked lime—not more than 10% of the weight of the cement. This not only increases the water-tightness of the concrete but also slightly increases the strength.

External water-proofing is applied to the water-exposed surface when in place. Various methods are used such as—

Plastering, troweling, or a granolithic finish. A paste of neat cement applied to the moistened surface with a brush.

Asphaltum, oil or paraffin washes, layers of paper or felt, applied either to the surface or between successive layers of concrete. Some of these methods have been successfully used in the New York Subway.

Liquid compounds applied like paint. Some of these act like paint or glaze; others are absorbed by the concrete, filling the pores. Some are claimed by the makers to act chemically on the concrete.

Sea Water Construction

“Alpha” Portland Cement has been very widely and successfully used in sea water construction because it contains no adulterants, no slag or other by-products. Hundreds of thousands of barrels have been specified by the U. S. Government. This is a strong endorsement; for its engineers are among the most skilled and the most exacting in the world.

Concrete made of “Alpha” resists salt water much better than wood or steel and without repeated painting required by the latter materials. Barnacles and other sea life, so disastrous to wood, do not affect concrete; as amply proven by concrete light-houses, sea-walls, harbor structures, etc.

In this kind of concrete work density is the vital factor that governs the selection and proportions of the aggregates. Fine sand should not be used.

For salt water exposure use only the highest grade of Portland Cement, such as “Alpha”. As a further aid to water-tightness, paint the exposed surface with several coats of cement paste. This should be done after the concrete has set, and be immediately preceded by a thorough application of water.



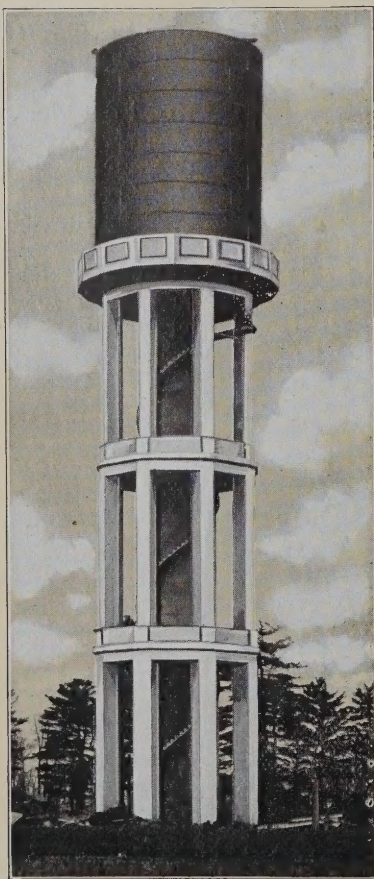
What Cement can do for the Owner of the Home, the Farm and other Real Estate

If you are going to build, build of concrete, that is a mixture of Portland Cement with sand, gravel or small stones and water. This will give you a structure that is practically indestructible, much more economical than any other, and very little—if at all—more expensive in cost of construction.

A concrete house requires no repairs, no painting; is cooler in hot weather, and takes less coal to keep warm in cold weather than any other kind of building; is non-inflammable, vermin proof, and will save you considerable money in insurance rates.

Is your house already built? Then you will be interested in the various inexpensive improvements you can make with cement.

Concrete walks around the house add much to its appearance. They are a boon to the house wife; for they prevent dust, dirt and mud from being carried into the house.



Concrete Support for Water Tank.

A damp cellar can be remedied by a concrete floor. It will improve the healthfulness of the entire house. Experiments have shown that much of the air in the house is "cellar air," which rises from floor to floor.

No hot clinkers or ashes can set fire to your floor, your ash, coal or wood bins if they are built of cement. A cement porch or a low cement wall around your front lawn adds immensely to the value of your property.

For cisterns or cistern linings, cement is the ideal material. Its compact surface is clean and free from dirt-lodging crevices.

Concrete stables, garages, chicken houses, etc., are popular everywhere, particularly for their perfect cleanliness, their fire-proofness and durability.

For weather-defying garden benches and ornamental fountains, Portland Cement yields the rich effect of aristocratic gardens at small cost.

Portland Cement has proved a "life-preserver" for decaying trees whose cavities have been filled with it.

On the farm, cement, with its hundred-fold uses, is as great an improvement over all other materials, as the modern thrasher over the flail.

Concrete barns, concrete floors in barns and barn-yards, concrete feed and water troughs, mean less work. At the same time your stock thrives better because of greater cleanliness.

For silos no other material equals cement which is not affected in the least by the fermentation of the ensilage.

The fire-proofness of concrete buildings makes them particularly desirable on the farm.

If you have a brook on your property, a concrete dam will give you cheap water-power; also cheap ice in winter. Concrete is a poor conductor of heat or cold, hence the ideal material for dairy houses, ice houses, spring houses, etc.

If there is too much water on your land, drain it with concrete tile, concrete gutters, pipe, etc.

Fences and fence posts, gate posts, terracing and retaining walls, culverts and bridges, are but a few of the many improvements possible with cement; all of which you can build yourself with your helpers in spare time.

The simple instructions for this kind of work can be readily mastered. The material is generally close at hand: the cement at your dealers; the sand and gravel from the creek bed, and the stones from your fields. Even if you must buy all the ingredients, concrete is still the most economical form of construction.

You will also find it convenient to keep a few bags of cement on hand. Nothing excels cement for fixing cracks in walls of every kind; for stopping leaks in drains, dams, troughs, etc.

These are only a few practical suggestions. To exhaust all the possibilities of cement for House or Farm, would take a very large book, as shown by partial list of the uses of Cement, page 21.

Should you require any additional information, do not hesitate to write us. Our Information Department will be very glad to assist you.



Definitions

Explanation of Cement Terms in Popular Language

Aggregates—The solid ingredients of concrete other than cement.

Batch—The amount of concrete mixed at one time.

Compression Stresses are strains that act towards each other in the same plane as in a wall or column under load.

Concrete—An artificial stone made from Portland Cement, sand and gravel or broken stone, with the addition of water.

Concrete Blocks—Building stones made from concrete.

Density of concrete is the ratio of a given volume of concrete to its weight. The fewer the voids (air spaces between the particles) the denser (hence heavier) the mass.

Gauging—The mixing of a certain quantity of water with the concrete ingredients.

Granolithic—Troweled to a smooth surface.

Grouting—A mixture of cement and water thin enough to be poured.

Hardening—The stone-like firmness gradually assumed by concrete. This increases for years after it is placed.

Monolithic Concrete—Concrete set in one solid mass.

Mortar—A mixture of cement, sand and the necessary water.

Neat (Portland) Cement—Portland Cement mixed with just enough water to work it.

Portland Cement—A product manufactured from certain materials accurately proportioned and finely ground which, on the addition of water, hardens in air or under water, and is generally used in "mortar" or in "concrete."

Proportioning—The determination of the proper quantities of cement and aggregates for a given quantity of concrete.

Reinforced Concrete—Concrete in which iron or steel shapes are imbedded to add strength and economize material.

"Setting"—The loss of plasticity of a cement mixture. The beginning of this change is called the "Initial Set", the completion, the "Final Set."

"Slow Setting"—Cement permits ample time for mixing and placing before the final set.

"Quick Setting"—The opposite of above.

Shearing Stresses are strains that tend to cut a substance, like the action of scissors or the punching of a plate.

Tension Stresses are strains tending to pull a substance apart (as, for example, in stretching a rope).

List of Uses for Portland Cement

To make a complete list is next to impossible, since new uses for this material are found every day. Almost anything that can be made of stone, brick, wood, iron, etc., can be made of Portland Cement—in most cases cheaper, in all cases more durable.

On the Farm

Anchors for Wire Fences, Posts and Telephones. Arbor Posts and Framings. Bridges: Foot traffic and vehicle. Building Blocks. Barns: Floors and foundations. Barn Door Curb to keep out water. Cellar Hatchways and Curb. Chimneys. Chimney Caps. Combined Mangers and Drinking Troughs. Culverts. Cisterns, rain water. Chicken House floors and foundations. Cellar Floors.	Corn Crib, floors and foundations. Cow Sheds, floors, troughs and drain. Drain Tile. Dams. Driveways. Feeding Floors. Feeding Platforms. Feeding Racks for Horses, Sheep and Cattle. Fence Posts. Floors: Stable, barn and cow sheds. Floors: Milk Room. Gasoline Storage Houses. Gasoline Engine Houses. Hitching Posts. Hitching Blocks. Hog Houses.	Hot Beds. Hot Houses. Hydraulic Ram Houses. Housing and Floors around spring, open to stock. Ice Houses. Mangers. Milk Houses. Milk Vats. Milk Can Tank Coolers. Manure Shallow Basin. Manure Cistern, Liquid. Milk Room Floor. Posts: Fence, Gate, Hitching Brace. Poles: Clothes Line, Telephone. Reservoir. Root Cellars. Steps.	Sign Posts. Silos. Silo Foundations and Vestibules. Tanks: Drinking, Storage, Elevated. Tank Septic. Troughs. Trough Feeding. Tree Preserving (by removing the decayed cores and filling the hollow with concrete). Water Tanks, Elevated, with Creamery. Smokehouse, Washhouse below. Water Troughs. Well Tops. Well Walls. Walks and Approaches.
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Further Partial List of Uses of Portland Cement

A Abattoirs. Abutments. Air Tanks. Amphitheatres. Anchorages. Aquariums. Aqueducts. Armor for Battleships. Arches. Art Figures. Assay Furnace Lining.	E Election Booths. Electric Conduits.	O Observation Towers. Office Buildings. Oil Stones. Ore Trestles. Ornamental Work.	Sea Walls. Sewage Disposal Plant. Sewers. Sewer Pipe. Shelves. Shingles. Sidewalks. Signal Towers. Sills. Slaughter Houses. Sockets between joints. Spandrels. Stables. Stacks. Stack Lining. Stadium. Stairways. Stations (R. R., etc.). Statuary. Stock Yards. Stoves. Street Paving. Stringers. Stringers for Steel Rails. Stucco. Subways. Surfacing Roads. Sun Dials. Survey Stakes. Swimming Pools. Switch Boards.
B Ballast Tanks in Warships. Balustrades. Band Stands. Barrels. Base Boards. Bath Tubs. Beams. Bedding Tile Ducts. Benches. Bicycle Race Tracks. Bicycle Paths. Bins. Blacksmith Forges. Boats. Boiler Covering. Boiling Tanks. Breakwaters. Bridges. Brine Tanks. Brooding Nests. Burial Vaults. Butts for Telegraph Poles. Bumpers (Car.). Bungalo. Burglar Proof Vaults.	F Factories. Fences. Filter Plants. Finials. Fireplaces. Fireproofing. Floating a Sunken Ship. Floors, Arched. Floors, Plain. Floors, Reinforced. Floors, Suspended. Flour Mills. Flower Boxes. Footings. Fortifications. Foundations. Fountains. Freight Platforms. Fruit Closets.	P Panels. Partitions. Pavilions. Paving. Pebble Dash. Petroleum Wells (cementing). Piers. Pilasters. Piles. Pillars. Pipe. Pipe Covering. Pits, Ash. Pits, Elevator. Pits, Waterproof. Plugs for Unused Ducts. Plumbobbs. Pointing Masonry. Poles, Flags. Poles, Telegraph. Poles, Trolley. Porch Blocks. Porch Columns. Porticos. Power House. Prison Cells. Prisons. Puddling. Pumping Stations.	T Table Tops. Tanks, Air. Tanks, Boiling. Tanks, Brine. Tanks, Gas. Tanks, Oil. Tanks, Water. Tannery Vats. Tennis Courts. Timbering Mines. Tombs. Tombstones. Toy Building Blocks. Transfer Pits. Trestles. Tunnels. Turntables.
C Caissons. Canal Locks. Capitals. Cast Stone. Cement Brick. Cementine Curtains. Cement Storage Bins. Churches. Clothes Posts. Coal Handling Plants. Coal Mines. Coal Pockets. Coal Trestles. Coffin Boxes. Columns. Concrete Caskets. Conduits. Coping. Cornices. Corner Stones. Crossings. Curbing.	G Garages. Gargoyles. Gas Purifiers. Gas Tanks. Gate Ways. Girders. Grain Bins. Grain Elevators. Grinding Stones. Green Houses. Grout. Gutters.	R Railbeds. Railroad Ties. Railway Stations. Reinforced Concrete (all kinds). Repairing Boilers. Repairing Cracked Seam Heads in Dinky Locomotives. Repairing Leaky Refrigerators. Repairing Leaky Auto-Radiators. Repairing Masonry. Repairing Trees. Retaining Walls. Rifle Pits. Rifle Targets. Round Houses. Roofs Reinforced. Roofing Slabs. Roofing Tile.	U Urinals. Urns.
D Dog Kennels. Domes. Doors. Drip and Splash Boards for Tanks. Dry Docks. Dwellings.	H Henneries. Hot Wells. Houses.	S Safes. Salt Mines. Sand Bins. Schools. Scouring, in place of sand soap.	V Vats. Vaults. Viaducts. Vine Props.
L Lighthouses. Lintels. Land Markers.	I Ice Boxes. Ice Houses. Ink Wells. Intake (water). Insulators.	M Masonry. Mile Posts. Mill-Race. Mine Supports. Moist-Closet. Monuments. Mortars. Mosaics.	W Wall Plaster. Warehouses. Warship Lining. Wash Tubs. Waterproof Pits. Water Towers. Wet Stones. Wharves. Window Sills.

Extracts from Report of Committee

American Society for Testing Materials

Adopted by the Society, November 14, 1904
Amended August 15, 1908

GENERAL OBSERVATIONS.

1. These remarks have been prepared with a view of pointing out the pertinent features of the various requirements and the precautions to be observed in the interpretation of the results of the tests.

2. The Committee would suggest that the acceptance or rejection under these specifications be based on tests made by an experienced person having the proper means for making the tests.

SPECIFIC GRAVITY.

3. Specific gravity is useful in detecting adulteration. The results of tests of specific gravity are not necessarily conclusive as an indication of the quality of a cement, but when in combination with the results of other tests may afford valuable indications.

TIME OF SETTING.

5. Great care should be exercised to maintain the test pieces under as uniform conditions as possible. A sudden change or wide range of temperature in the room in which the tests are made, a very dry or humid atmosphere, and other irregularities vitally affect the rate of setting.

TENSILE STRENGTH.

6. Each consumer must fix the minimum requirements for tensile strength to suit his own conditions. They shall, however, be within the limits stated.

CONSTANCY OF VOLUME.

7. The tests for constancy of volume are divided into two classes, the first normal, the second accelerated. The latter should be regarded as a precautionary test only, and not infallible. So many conditions enter into the making and interpreting of it that it should be used with extreme care.

8. In making the pats the greatest care should be exercised to avoid initial strains due to molding or to too rapid drying-out during the first twenty-four hours. The pats should be preserved under the most uniform conditions possible, and rapid changes of temperature should be avoided.

9. The failure to meet the requirements of the accelerated tests need not be sufficient cause for rejection. The cement may, however, be held for twenty-eight days, and a retest made at the end of that period, using a new sample. Failure to meet the requirements at this time should be considered sufficient cause for rejection, although in the present state of our knowledge it cannot be said that such failure necessarily indicates unsoundness, nor can the cement be considered entirely satisfactory simply because it passes the tests.

GENERAL CONDITIONS.

1. All cement shall be inspected.

2. Cement may be inspected either at the place of manufacture or on the work.

3. In order to allow ample time for inspecting and testing, the cement should be stored in a suitable weather-tight building having the floor properly blocked or raised from the ground.

4. The cement shall be stored in such a manner as to permit easy access for proper inspection and identification of each shipment.

5. Every facility shall be provided by the contractor and a period of at least twelve days allowed for the inspection and necessary tests.

6. Cement shall be delivered in suitable packages with the brand and name of manufacturer plainly marked thereon.

7. A bag of cement shall contain 94 pounds of cement net. Each barrel of Portland cement shall contain 4 bags.

8. Cement failing to meet the seven-day requirements may be held awaiting the results of the twenty-eight day tests before rejection.

9. All tests shall be made in accordance with the methods proposed by the Committee on Uniform Tests of Cement of the American Society of Civil Engineers, presented to the Society January 21, 1903, and amended January 20, 1904, and January 14, 1908, with all subsequent amendments thereto.

SPECIFICATIONS.

10. The acceptance or rejection shall be based on the following requirements.

PORTLAND CEMENT.

17. **Definition**—This term is applied to the finely pulverized product resulting from the calcination to incipient fusion of an intimate mixture of properly proportioned argillaceous and calcareous materials, and to which no addition greater than 3% has been made subsequent to calcination.

SPECIFIC GRAVITY.

18. The specific gravity of the cement ignited at a low red heat shall not be less than 3.10; and the cement shall not show a loss on ignition of more than 4%.

FINENESS.

19. It shall leave by weight a residue of not more than 8% on the No. 100, and not more than 25% on the No. 200 sieve.

A No. 100 sieve has 10,000 meshes to the square inch and a No. 200 sieve has 40,000 meshes to the square inch.

TIME OF SETTING.

20. It shall not develop initial set in less than thirty minutes; and must develop hard set in not less than one hour, nor more than ten hours.

TENSILE STRENGTH.

21. The minimum requirements for tensile strength for briquettes one inch square in section shall be within the following limits, and shall show no retrogression in strength within the periods specified:*

Age.	Neat Cement.	Strength.
24 hours in moist air		150-200 lbs.
7 days (1 day in moist air, 6 days in water)		450-550 lbs.
28 days (1 day in moist air, 27 days in water)		550-650 lbs.
One Part Cement, Three Parts Sand.		
7 days (1 day in moist air, 6 days in water)		150-200 lbs.
28 days (1 day in moist air, 27 days in water)		†200-300 lbs.

CONSTANCY OF VOLUME.

22. Pats of neat cement about three inches in diameter, one-half inch thick at the centre, and tapering to a thin edge, shall be kept in moist air for a period of twenty-four hours.

(a) A pat is then kept in air at normal temperature and observed at intervals for at least 28 days.

(b) Another pat is kept in water maintained as near 70° F. as practicable, and observed at intervals for at least 28 days.

(c) A third pat is exposed in any convenient way in an atmosphere of steam, above boiling water, in a loosely closed vessel for five hours.

23. These pats, to satisfactorily pass the requirements, shall remain firm and hard and show no signs of distortion, checking, cracking or disintegrating.

SULPHURIC ACID AND MAGNESIA.

24. The cement shall not contain more than 1.75% of anhydrous sulphuric acid (SO₃) nor more than 4% of magnesia (MgO).

Submitted on behalf of the Committee.

GEORGE F. SWAIN, Chairman.

GEORGE S. WEBSTER, Vice-Chairman.

RICHARD L. HUMPHREY, Secretary.

*For example, the minimum requirement for the twenty-four hour neat cement test should be some specified value within the limits of 150 and 200 pounds, and so on for each period stated.

†If the minimum strength is not specified the mean of the values shall be taken as the minimum strength required.



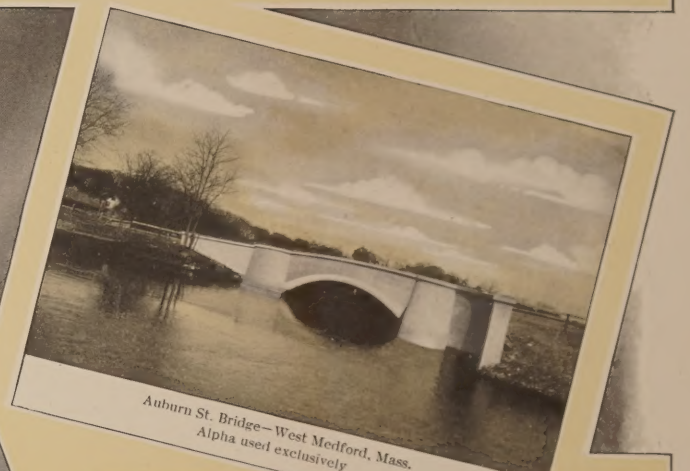
New Bridge over Connecticut River—Hartford, Conn.
Alpha Portland Cement used exclusively
125,000 Barrels



Humphrey St. Bridge—New Haven, Conn.
Alpha used exclusively



Armory Bridge—West Medford, Mass.
Alpha used exclusively



Auburn St. Bridge—West Medford, Mass.
Alpha used exclusively



Foot-bridge over Pennsylvania R. R. Tracks
in Allegheny Park, Allegheny, Pa.



Union Railroad Bridge, East Pittsburg, Pa.
Alpha Cement used exclusively



N. Y. N. H. & H. R. R. Bridge over Mill River, New Haven, Conn.
Alpha used exclusively



Scenery Hill Bridge, Scenery Hill,
Washington County, Pa.

WAR DEPARTMENT
UNITED STATES ENGINEER OFFICE,
Office J. E. Turtle, Assistant Engineer
Warrington, Fla.

TO WHOM IT MAY CONCERN:

This is to certify that I have made tests of the ALPHA CEMENT, which is being used in the construction of the sea wall at Port Pichens, Fla., which tests have been extended over a period of eleven (11) months and has been the test on many thousand barrels, and that in all cases and under all conditions these tests have exceeded the requirements of the U. S. Engineer Department. The tests for tensile strength have included from seven (7) days to many months and have proven to be above the standard.

Respectfully,
J. E. Turtle
Assistant Engineer.

C. The work done with Alpha Portland Cement during the past twenty years has stood the test of time. It is made from the best rock in the famous Lehigh Valley Cement Belt and is absolutely pure and unadulterated. It contains no Furnace Slag whatever.

Ressemer Cement Company
Connellsville, Pa.
Pittsburgh, Pa. January 31, 1910.
The Alpha Portland Cement Company,
Pittsburgh, Pa.

Dear Sirs:
During recent years we have used several different kinds of cement at our various works, and take pleasure in advising you that Alpha has given us the most satisfactory results. We have found it to be most uniform and reliable, and have never been compelled to repair any work in which Alpha was first used. Since we have been using Alpha exclusively, our records show that our concrete work has cost less per cubic yard than it formerly did, and you need have no hesitation about referring prospective customers to us, as we shall be pleased to recommend it for any purpose where the best Portland Cement is required.

Yours very truly,
RESSEMER CEMENT COMPANY
P. C. Martin
General Manager.

**GENERAL CHEMICAL COMPANY
OF PENNSYLVANIA**

223 FOURTH AVE. PITTSBURGH, PA. Jan. 29, 1910.

Alpha Portland Cement Co.,
Pittsburgh, Pa.

Dear Sirs:
With reference to construction of our new plant at Newell, Fayette County, Pa., beg to say we have used, up to the present time, in the neighborhood of 10,000 barrels of your Alpha Cement. Same has been uniform in quality and has been very satisfactory to us. As a further proof of this we might also state that not a single barrel of the quantity received has been rejected.

Yours very truly,

GENERAL CHEMICAL CO. OF PENN'A.

Treasurer,
James A. Fisher

UNITED STATES ENGINEER OFFICE
THIRD COMPANY BUILDING
U. S. COAST AND GEODETIC SURVEY
GALVESTON, TEXAS

June 29, 1909.

TO WHOM IT MAY CONCERN:

This is to certify that during the past twelve or fifteen years, the U. S. Engineer Department at Galveston, Texas, has used about 25,000 barrels of Alpha Portland cement on fortifications, Seemalls, etc., which has given satisfaction.

S. M. Kline
Assistant Engineer.

P. J. Vautrin
General Contractor
No. 2318 Church Street
Pittsburgh, Pa.

July 3rd, 1909.

Alpha Portland Cement Co.,
Savannah, Ga.

Gentlemen:-

In reply to your inquiry, I am pleased to attest to the excellent quality of your cement. I have been using Alpha during the past fifteen years and never having had a poor one. Believe that it is the highest grade Portland Cement on the market today. Its strength is unequalled, the quality and color have been found absolutely uniform, and so far as carrying sand is concerned, I have found it satisfactory.

I take this opportunity of thanking you for your courteous treatment of me throughout, and with kindest regards, beg to remain,

Yours truly,
P. J. Vautrin

BIRMINGHAM SUPPLY CO.
SEWER PIPE & SPECIALTY
BOTH TELEPHONES, 227 SOUTH
Pittsburgh, Pa. Jan. 29, 1910.

Alpha Portland Cement Co.,
city.

Gentlemen:-

We want to express our appreciation of the good qualities of the Alpha Portland Cement in this letter. We have used over One Hundred and Fifty Thousand Barrels of this cement and find it the best Portland Cement in the world for uniformity in color and strength.

We would say that there is no cement its equal for doing concrete work in cold weather, as the frost does not seem to hurt the strength of the cement.

Yours truly,
Birmingham Supply Co.
S. J. Thompson

Put a Muck
GENERAL CONTRACTORS
PITTSBURGH, PA. Jan. 31st, 1910.

Alpha Portland Cement Co.,
Pittsburgh, Pa.

Gentlemen:-

While we believe that the manufacturer should have his attention called to any imperfections in his product regarding workmanship or material, yet we also believe he is equally entitled to the satisfaction of knowing that his efforts to produce an honest article have been successful. We have used Alpha Portland Cement on various kinds of work and under all conditions and have invariably found it absolutely uniform and capable of meeting the requirements of the most rigid specifications, especially those covering reinforced work.

We consider it of the very highest quality and shall continue to use it.

Yours very truly,
W. E. Miller
For *J. R. Bell*

JAMES L. STUART
CONSTRUCTION ENGINEER
641 SIXTH AVENUE, PITTSBURGH, PA.

Jan. 31, 1910.

Alpha Portland Cement Co.,
Pittsburgh, Pa.

Gentlemen:-

We have herewith contract for furnishing all cement required in the School of Medicine Building for the University of Pittsburgh.

We are very glad to give you this order as your cement has always been most satisfactory both to ourselves and the Architect.

I have used your cement in the Pittsburgh district for about a period of ten years and have always found it to be of the best quality. So far we have not had a single barrel of it condemned.

Yours truly,
James L. Stuart

BUTLER BROTHERS,
GENERAL CONTRACTORS
104 NEW YORK LIFE BUILDING
St. Paul, Minn.
Jan. 4, 1910.

Alpha Portland Cement Co.,
Pittsburgh, Pa.

Gentlemen:-

We used over 150,000 barrels of "ALPHA" for our work in constructing the Detroit River Tunnel. Every barrel was carefully tested by the Engineers in charge and not one barrel rejected.

Yours very truly,
Butler Brothers Construction Co.
Wm. Butler



URBAN CONCRETE COMPANY
5 & 7 EAST 42ND STREET

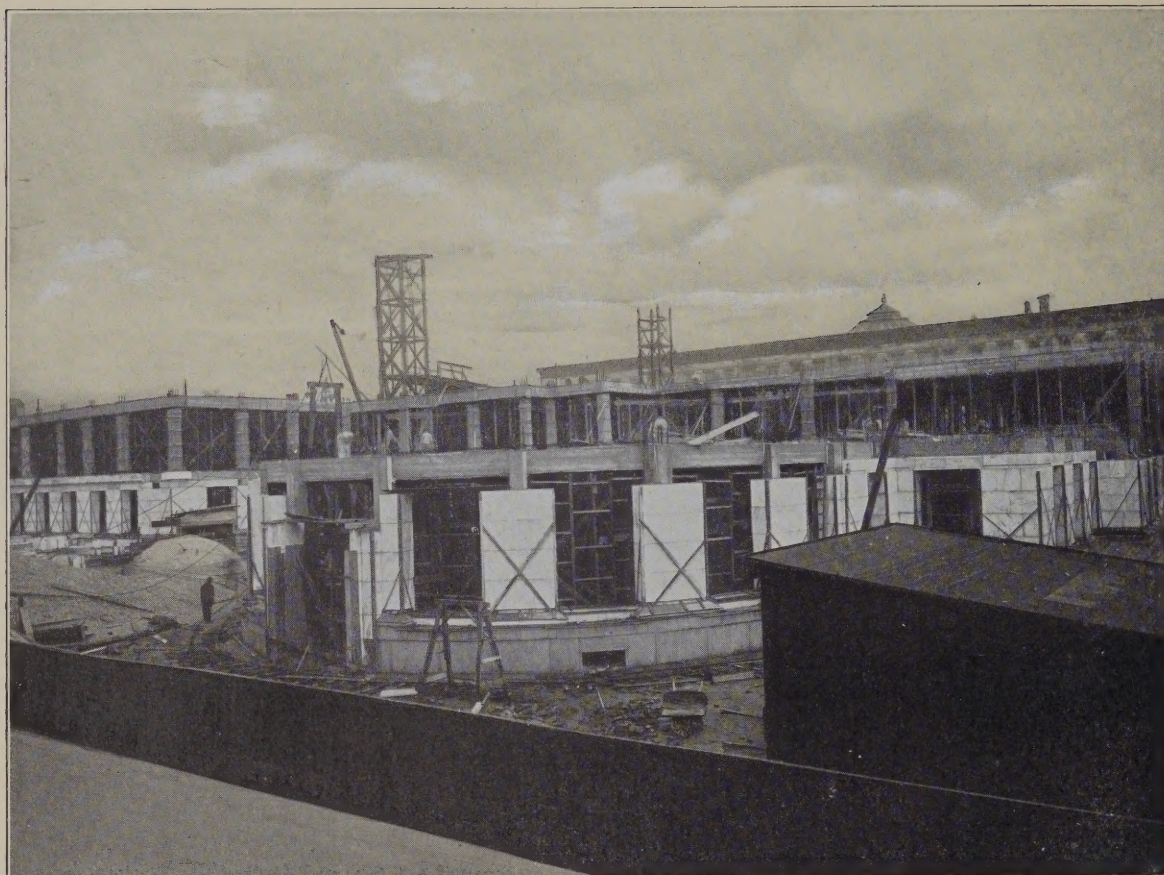
Alpha Portland Cement Co.,
No. 50 Church street, New York City.

New York, July 15, 1909.

Gentlemen:—We take pleasure in stating that we used approximately 15,000 barrels of Alpha Portland Cement in connection with the floors of the Hudson Terminal Buildings in New York City. Although this cement was subjected to rigid tests we had no trouble whatever in meeting the requirements and the cement has given entire satisfaction in every respect.

Very truly yours,

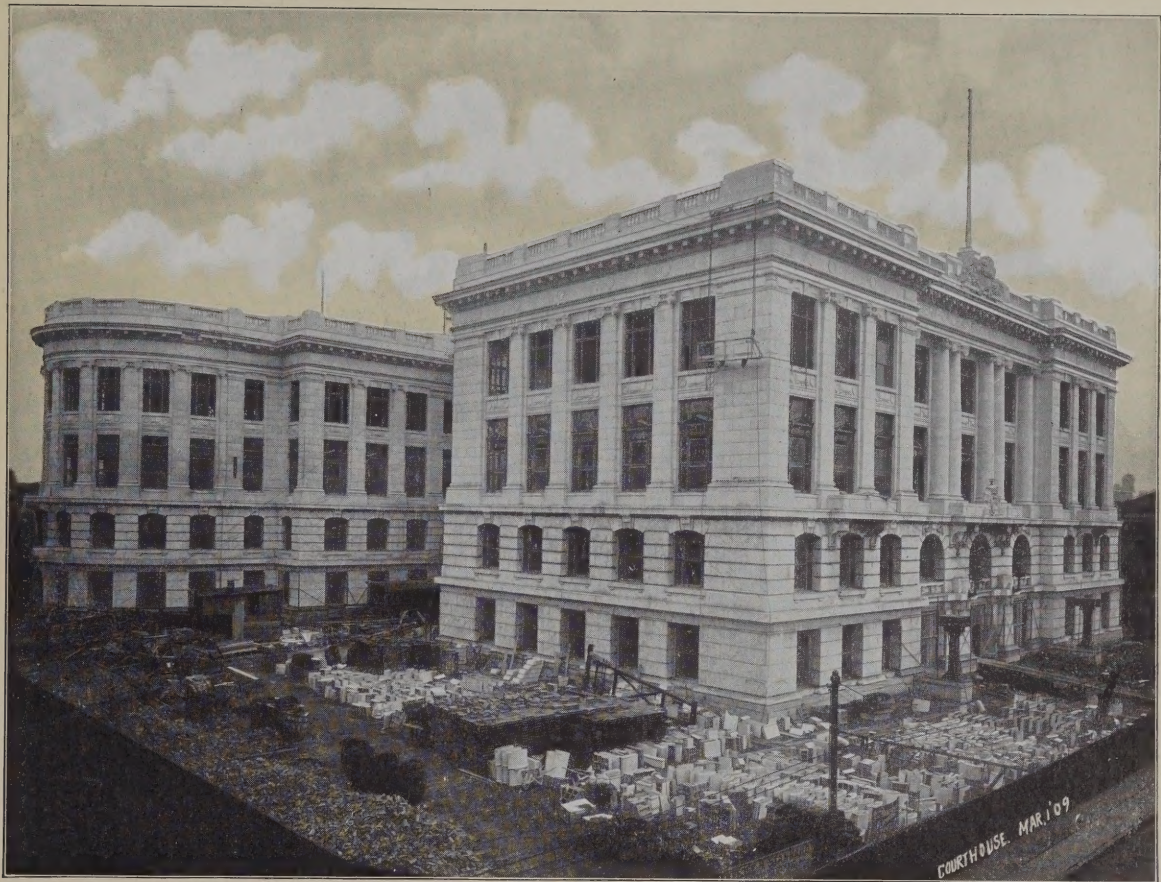
URBAN CONCRETE COMPANY
Per W. A. FEIGELSTOCK, Pres.



Court House, New Orleans.

(In Course of Construction.)

Alpha Portland Cement was used exclusively in this structure, approximately 16,000 barrels being consumed. There are some of the longest spans of reinforced concrete ever attempted in this building, one of them being 55 feet long. Stairways built entirely of concrete are 8' 6" wide.



J. J. CLARK CO., Limited

DEALERS IN
BUILDING MATERIAL
New Orleans, La.

May 27, 1909.

Alpha Portland Cement Co.

Gentlemen:—Alpha Portland Cement was **used exclusively** on this work. Building is of entire reinforced concrete construction of the most improved type. The cement used has given the very best satisfaction.

Very truly yours,

J. J. CLARK, Co., Ltd.,
JOHN J. VOELKEL, Secretary



CHARLES A. NEWHALL
REAL ESTATE, MORTGAGES
INSURANCE

18 TREMONT STREET, ROOM 1135

Boston, July 10, 1909.

Alpha Portland Cement Co.,
Boston, Mass.

Gentlemen:—We used Alpha Portland Cement in the construction of our apartment houses on Beacon street and it gave us first-class satisfaction in every way. We consider "Alpha" one of the most uniform and highest grade brands of Portland Cement on the market.

Very truly yours,
CHARLES A. NEWHALL



The shelters at Revere Beach, Mass., as pictured above, were constructed entirely of Alpha Portland Cement.

This illustrates effects possible only through the use of cement.



THE DRAVO CONTRACTING CO.
GENERAL CONTRACTORS
LEWIS BLOCK
PITTSBURG, PA.

January 28, 1910.

Alpha Portland Cement Co.,
Pittsburg, Pa.

Gentlemen:—In connection with the illustration of Lock and Dam No. 2, Allegheny River, beg to say we completed this work in 1908, and on the entire job used about 35,000 barrels of Alpha Portland Cement.

In addition to this we have used probably 100,000 barrels on other Government work in various parts of the country, and, even with their very rigid specifications, we have not had a single barrel condemned.

Very respectfully,

THE DRAVO CONTRACTING COMPANY
R. M. DRAVO, Vice President



**South Terminal Station, Boston,
Massachusetts**

Although of granite construction there was 125,000 barrels of Alpha Portland Cement used in the foundation, floors, etc., of this building. Alpha Portland Cement was used exclusively.



BENJAMIN FOX, Inc.
M. BOS. SOC. C. E.
BUILDING CONSTRUCTION
15 EXCHANGE STREET

Boston, Mass, June 4, 1909.

Alpha Portland Cement Company,
Boston, Mass.

Dear Sirs:—We used approximately 20,000 barrels of "Alpha" cement in the construction of the buildings for the Boston Woven Hose and Rubber Company, at Cambridge, and are very much pleased with the results obtained.

We have used thousands of barrels of "Alpha" on other contracts and we consider it one of the most uniform and highest grade brands on the market, and one that can be depended upon at all times.

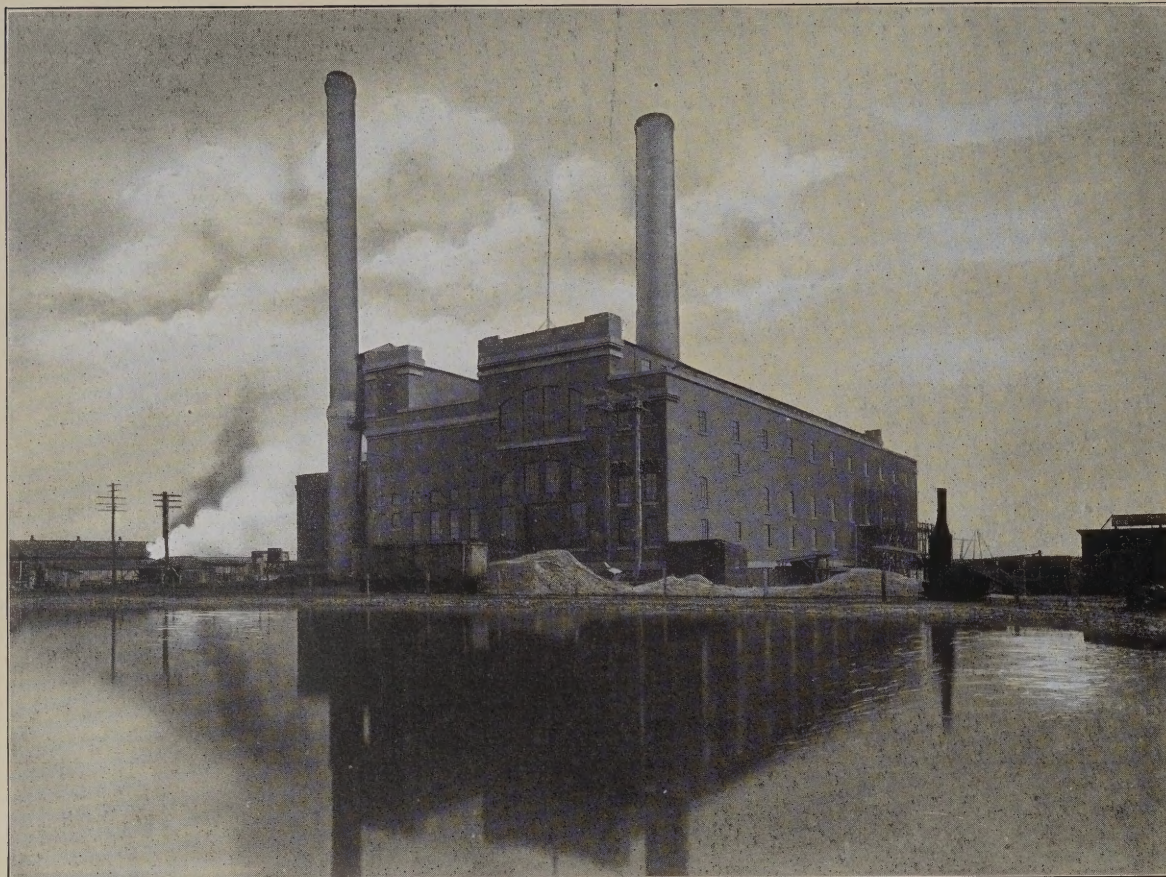
Very truly yours,

BENJAMIN FOX, Incorporated
Per BENJ. FOX, Pres.



The above is a picture of a concrete block building devoted entirely to the manufacture of Concrete Blocks.

Alpha Portland Cement used exclusively.



BALTIMORE FERRO-CONCRETE CO.
REINFORCED CONCRETE CONSTRUCTION

Alpha Portland Cement Co.,
Easton, Pa.

Baltimore, Md., August 9, 1909.

Gentlemen:—When one invariably receives absolute satisfaction from an article which one constantly uses, he, at some time or other, feels like expressing his appreciation. We have used Alpha Portland Cement for the past six years and never in our experience have we found it to be other than a high-grade Portland of the finest quality.

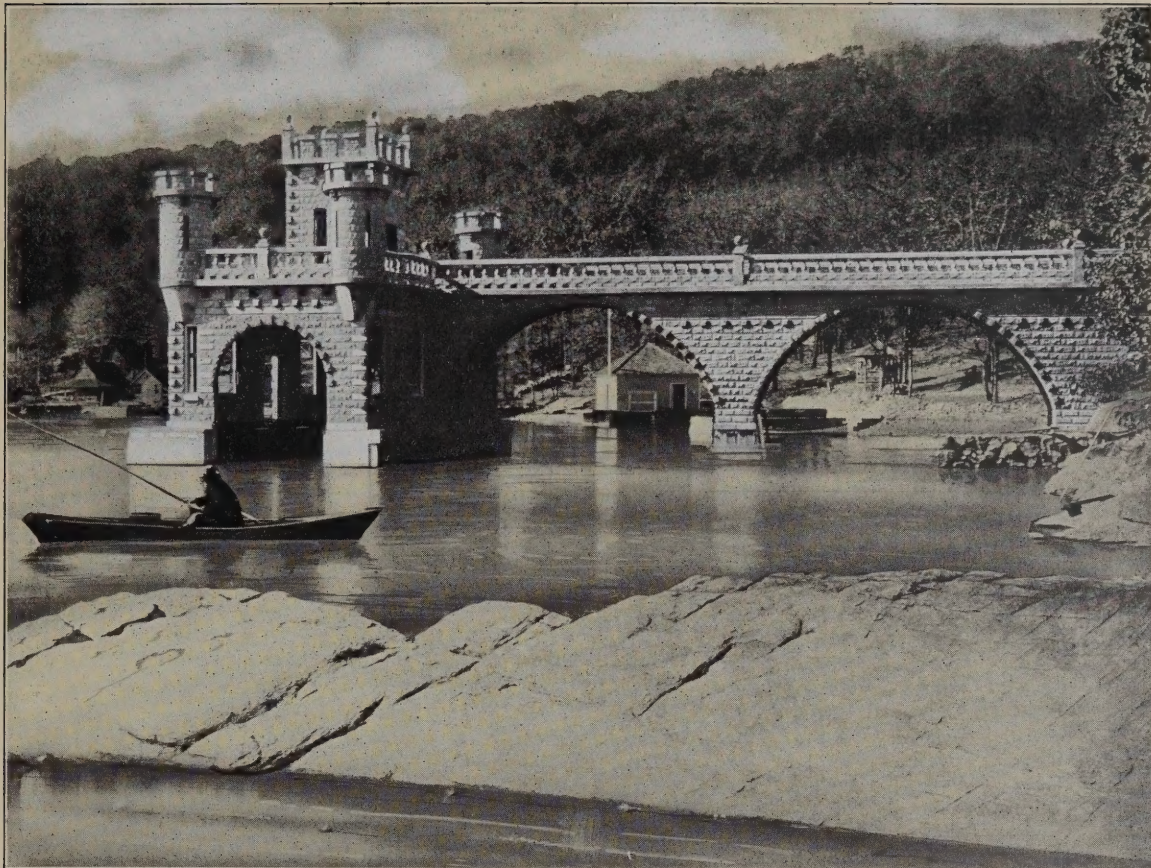
We used "Alpha" exclusively in the construction of a reinforced concrete building for the Westport Power House, and the cement was absolutely uniform in both color and quality.

We might also add that we used Alpha exclusively in the construction of 164 other representative structures throughout the country too numerous to mention.

Yours truly,

BALTIMORE FERRO-CONCRETE COMPANY

Per HERBERT J. WEST, Pres.



HUDSON MAXIM
Maxim Park
LANDING, NEW JERSEY
TELEPHONE 36 HOPATCONG

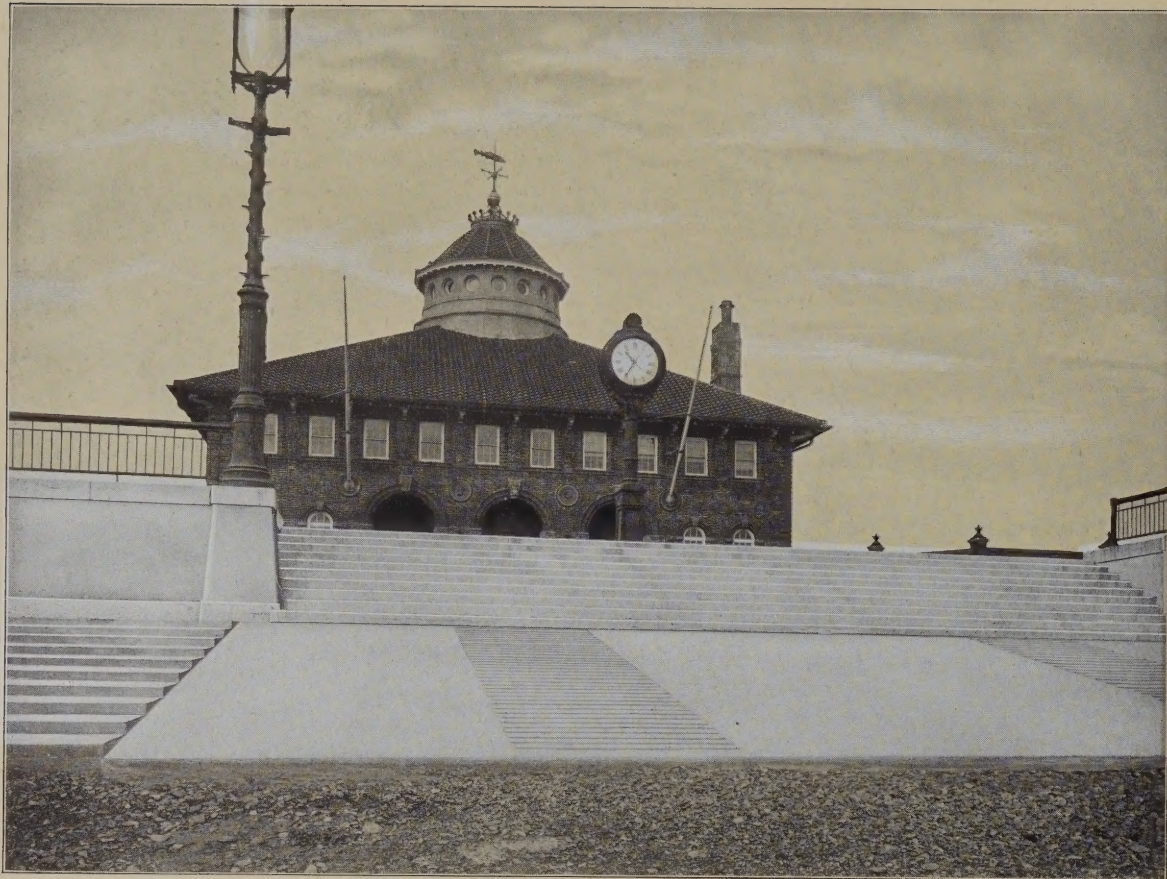
Landing, N. J., August 15, 1909.

To the Alpha Cement Co.

Gentlemen:—I have from time to time used a large amount of Portland Cement in my building construction at Maxim Park, New Jersey. Of the different varieties that I have tried the Alpha Portland Cement has given me the best satisfaction. It was with this cement that my pier was constructed. There is but little steel reinforcement in the structure—none whatever in the arches.

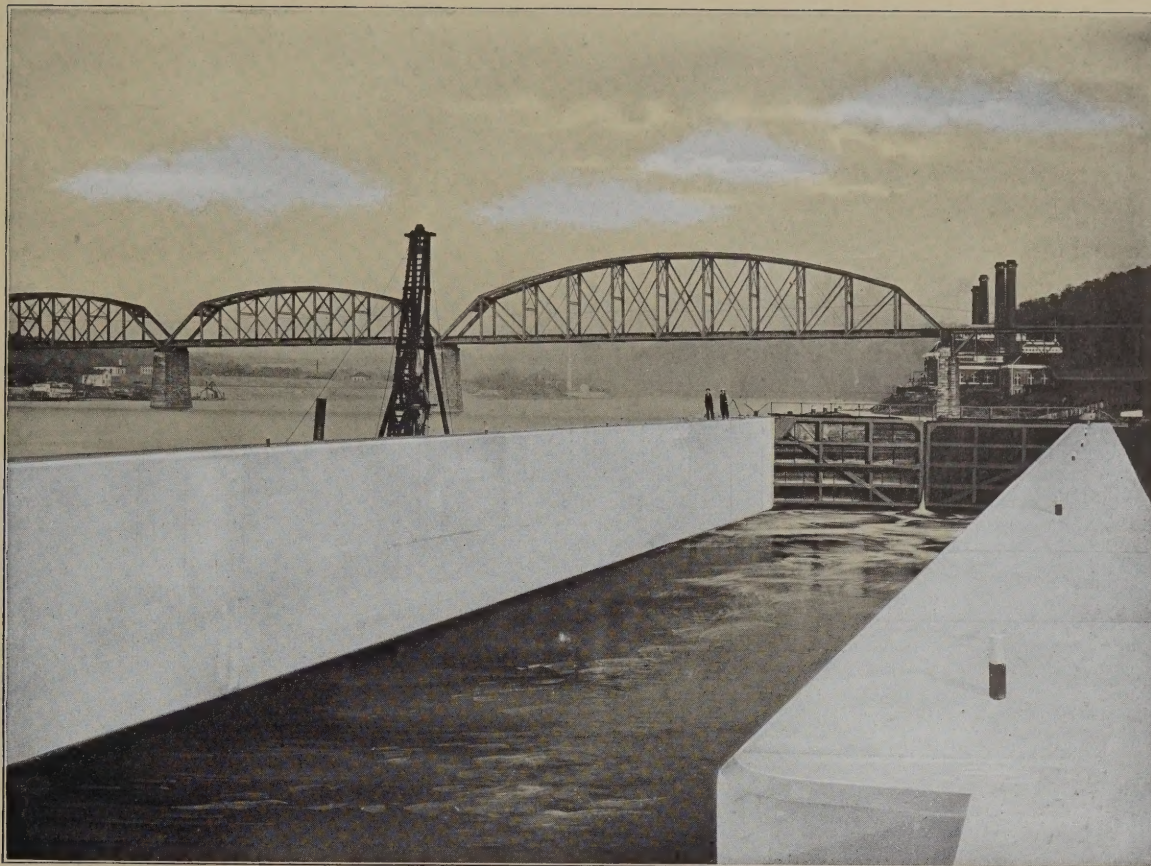
Yours faithfully,

HUDSON MAXIM



All concrete work at Revere Beach, Mass., represents the use of but one brand of cement—"Alpha."

The approach to the building above not only symbolizes the slogan, "For Eternity," but illustrates the conversion of a prosaic possibility into an artistic effect.



The picture above, like the one on preceding page, illustrates Lock and Dam No. 2 on Allegheny River, above Pittsburg. This work represents improvements being made by the U. S. Government tending to the development of commerce along navigable streams. Millions of dollars are being appropriated every year for this purpose, and the inspection of all materials is done under the watchful eye of the Government Engineers.



C. W. BLAKESLEE & SONS
GENERAL CONTRACTORS

New Haven, Conn., June 3, 1909.

Alpha Portland Cement Co.,
522 Board of Trade Bldg., Boston, Mass.

Gentlemen:—We have used, in connection with our contract with the N. Y., N. H. & H. R. R. Co., in New Haven, an immense quantity of your cement within the last two years, and will say that it has given us excellent satisfaction, and we consider the work which we have done with it as perfect as any we know of.

We certainly shall continue to use this cement whenever opportunity arises.

Very truly yours,

CHAS. W. BLAKESLEE & SONS



On N. Y., N. H. & H. R. R.

About 40,000 barrels of Alpha Portland Cement was used by Chas. W. Blakeslee & Sons, of New Haven, Conn., in the construction of work done by them for the N. Y., N. H. & H. R. R., as shown in the above illustration as well as on preceding page.



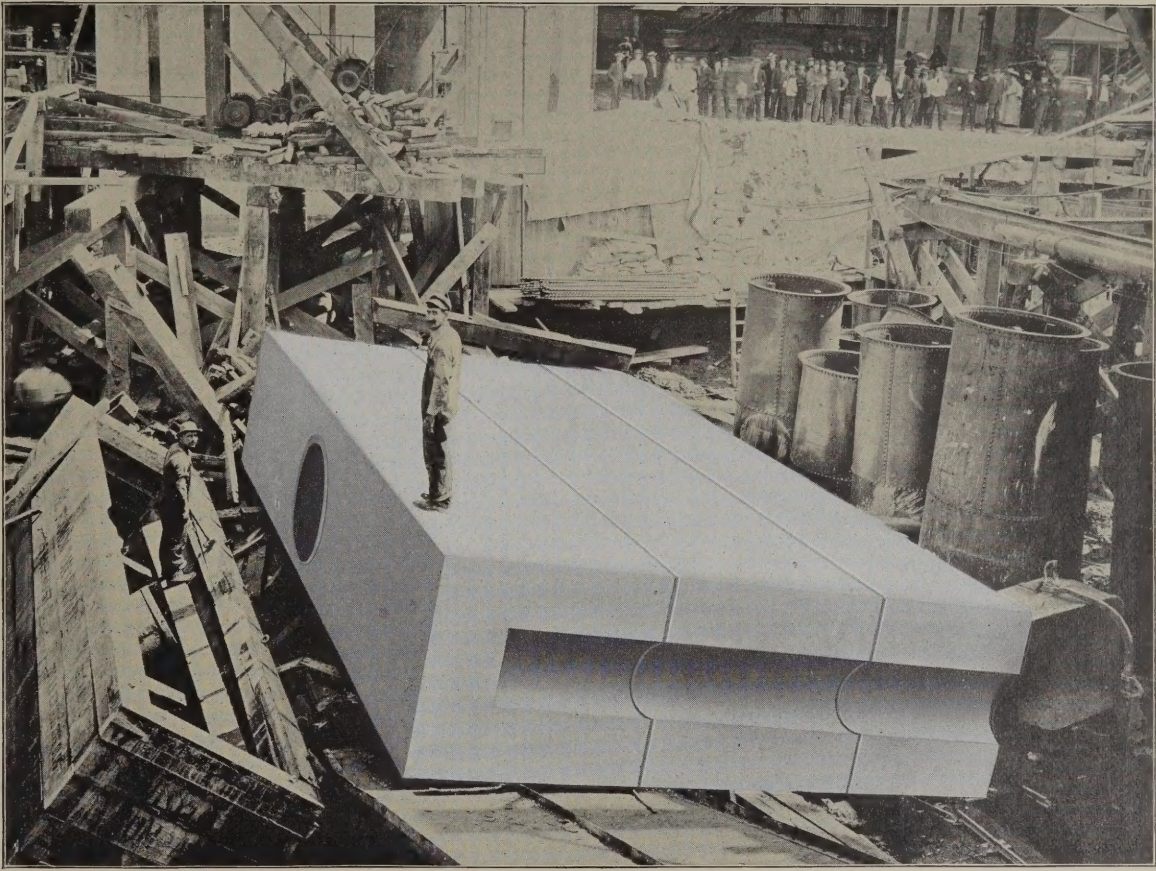
Galveston Sea Wall Built with 28,500 Barrels of "Alpha."

(Extract from Daily Press, July 23, 1909.)

"Galveston Sea Wall Withstands the Storm. Built of Alpha Portland Cement, This Magnificent Piece of Concrete Engineering Stands Like 'The Rock of Gibraltar.'"

"When the equinoctial blew into Galveston a few years ago, it found a city as proud and left it with a devastation as complete as was given to Pompeii of old.

"Yesterday the storm came again and beat with all its fury, but Galveston stands today unharmed, high and dry above the tidal waves. The famous Sea Wall, constructed by the U. S. Government at an immense expense, held the tide and saved the day. It will be interesting to many to know that in the construction of this wall Alpha Portland Cement was used."



**Concrete Block Weighing
250 Tons**

Alpha Portland Cement was used in the foundation and construction of the new U. S. Express Co. building in New York, and, as usual, gave entire satisfaction.



OFFICE OF
G. G. RIGGS
CONTRACTOR

Waterbury, Conn., June 3, 1909.

Alpha Portland Cement Co., Easton, Pa.

Gentlemen:—I have used about 10,000 barrels of Alpha Cement and have found it perfectly satisfactory.

Wall around Hillside Cemetery, Naugatuck, Conn: Length, 1600 ft.; height, 9 ft. Alpha Cement used. Built by G. G. Riggs, Waterbury, Conn.

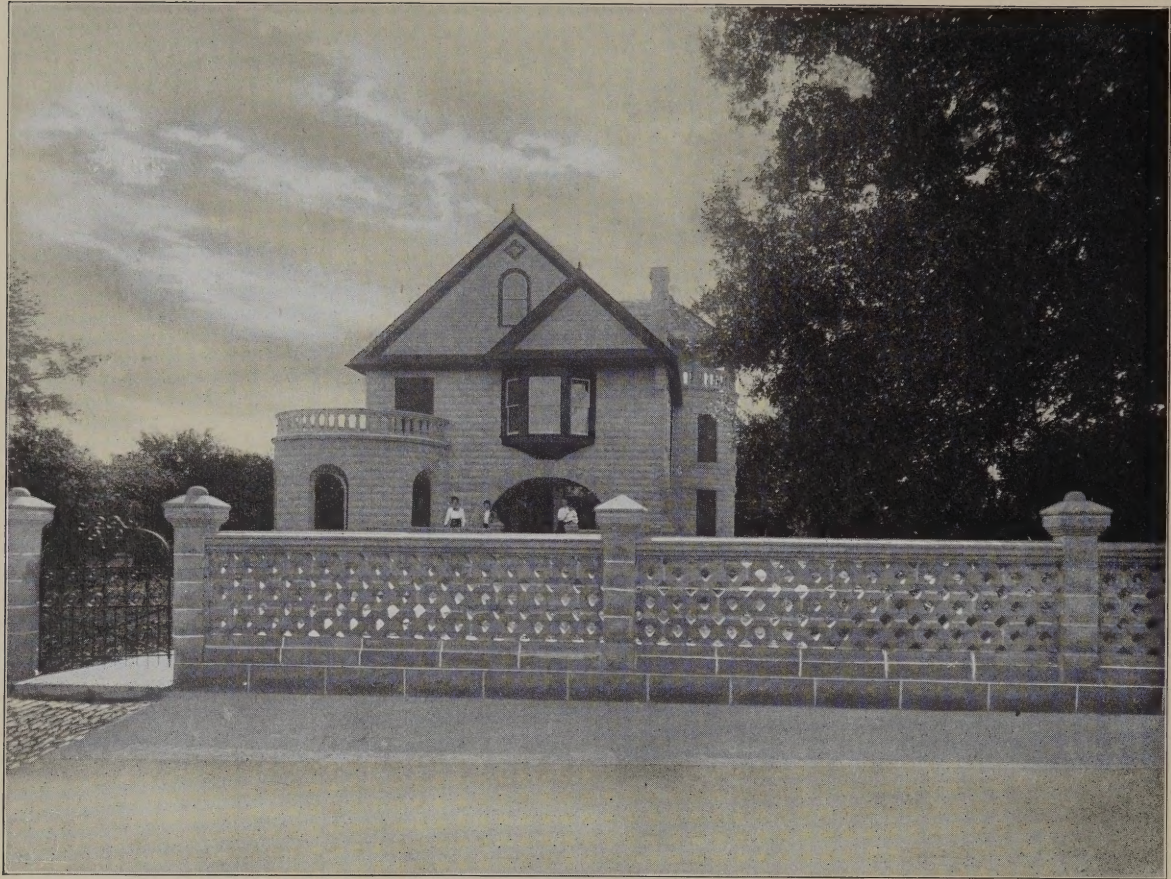
Yours truly,

G. G. RIGGS



**Morgan Farm, Beloit,
Wisconsin**

The above illustrations only represent a portion of esthetic improvements accomplished on this farm through the use of Alpha Portland Cement. The residence is cement from bottom of foundation to top of chimney.



**Residence of Johnson Helm,
Oneca, Florida.**

This residence, as also the fence and walk were made exclusively of Alpha Portland Cement. This, of course, but assists in illustrating the possibilities in the use of cement.



**John Linder's Stable, Carlisle,
Pennsylvania**

Erected by Carlisle Building Block Company.
In this structure Alpha Portland Cement was used
exclusively.

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